

TECHNICAL REVIEW COMMENTS ON  
ON-SITE DISPOSAL FACILITY DESIGN CRITERIA PACKAGE  
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

GENERAL COMMENTS

Design Criteria Package

Commenting Organization: U.S. EPA                      Commentor: Saric  
Sections: All                      Page #: Not Applicable (NA)                      Line #: NA  
Original General Comment #: 1

Comment: Consideration should be given to using and referencing documents that include the design and as-built drawings of Cells 3 through 6 of the On-site Disposal Facility (OSDF). The Phase V OSDF expansion design should include lessons learned at Fernald and other Uranium Mill Tailing Remedial Action (UMTRA) sites and incorporate changes from existing OSDF cell design.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.7                      Page #: NA                      Line #: NA  
Original General Comment #: 2

Comment: Test pads are required to determine the as-built hydraulic conductivity and moisture content of a clay liner, as stated in Ohio Administrative Code (OAC) 3745-27-08(C)(1)(n). However, full-scale OSDF cells have been built from the same borrow source as will be used for Phase V construction. The clay from the borrow source has been tested in-situ in Cells 3 through 6 of the existing OSDF, submitted for review and approved by the Ohio Environmental Protection Agency and U.S. Environmental Protection Agency (EPA). Therefore, test pads would not be a requirement of the preconstruction testing program, according to OAC 3745-27-8(C)(1)(m)(ix). However, if the design of the Phase V clay liner or clay cap varies from that of Cells 3 through 6, or if a different clay borrow location is used, then OAC 3745-27-08(C)(1)(n) will apply and a test pad will be required.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.4.9                      Page #: NA                      Line #: NA  
Original General Comment #: 3

Comment: A liner compatability study is not required, unless the Phase V liner and cap use materials significantly different from those found in Cells 3 through 6. However, if the type of waste will differ from the type

of waste in Cells 3 through 6, or if changes in liner and cap materials are planned, a liner compatability study should be performed.

Commenting Organization: U.S. EPA  
Section #: 2  
Original General Comment #: 4  
Comment: The calculation sections should be revised to include the equations that will be used and what variables will be used in those equations. Rationale for the input variables used should be included in each section.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2                      Page #: NA                      Line #: NA  
Original General Comment #: 5  
Comment: The references to OAC used in this section are inconsistent. Some use a full reference such as Section 2.4.3, and some omit the code number in the reference, such as Section 2.1.2. The text should be reviewed and revised accordingly.

Commenting Organization: U.S. EPA  
Section #: 2 Page #: NA  
Original General Comment #: 6  
Comment: All Applicable or Relevant and Appropriate Requirements (ARAR) references in this document should be checked and corrected. A number of OAC quotes are incorrect. Some specific examples are included in the specific comments.

## Drawings

Commenting Organization: U.S. EPA  
Drawings: Cross Section Details  
Original General Comment #: 7  
Comment:     Cross-section drawings that include buried pipes  
             should be revised to show that pipes are at least 3 feet  
             below ground surface to prevent frost damage.

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Commenting Organization: U.S. EPA  
Drawings: G-30 and G-31  
Original General Comment #: 8  
Comment: Consideration should be given to field seaming geomembranes by thermal fusion welding instead of extrusion welding. Thermal welding provides several advantages over extrusion welding: (1) significantly

higher peel strength can be achieved, (2) weld strength is more uniform, and (3) two parallel welds can be made, which allow for air pressure testing between the welds.

Commenting Organization: U.S. EPA Commentor: Saric  
 Drawings: G-17, G-18, G-39, G-40  
 Original General Comment #: 9  
 Comment: Pipe design should be revised to include manholes or clean-outs at each bend in the pipe.

Commenting Organization: U.S. EPA Commentor: Saric  
 Drawings: 90X-6000-G-00386 to 90X-6000-G-00409  
 Original General Comment #: 10  
 Comment: Detail drawings should show individual graphic scales, because the 11 by 17-inch drawings provided are not to scale.

#### SPECIFIC COMMENTS

##### Design Criteria Package

Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: 2.1.2 Page #: 2-1 and 2-2 Line #: NA  
 Original Specific Comment #: 1  
 Comment: The fourth bullet of the first paragraph is missing a reference to OAC 3745-27-07(H)(2)(e). Also, the reference to OAC in the sixth bullet is not correct; the correct reference should be OAC 3745-27-07(H)(3)(a). The text should be reviewed and revised accordingly.

Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: 2.2.2.2 Page #: 2-5 Line #: NA  
 Original Specific Comment #: 2  
 Comment: The final cover system slope should be evaluated as to whether a slope up to 25 percent will provide an adequate factor of safety for the 200-year design period of the OSDF.

Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: 2.2.2.3 Page #: 2-5 Line #: NA  
 Original Specific Comment #: 3  
 Comment: The first bullet item states that the bottom of the OSDF will overlies at least 12 feet of undisturbed gray till. The second and bottom bullet items in Section 2.1.2 state that the bottom of the OSDF liner will not be less than 15 feet. The sections should be revised to be

consistent with a 15-foot separation required between the bottom of the OSDF and the Great Miami Aquifer.

Commenting Organization: U.S. EPA Commentor: Saric  
Section #: 2.2.2.3 Page #: 2-5 Line #: NA  
Original Specific Comment #: 4

Comment: The second bullet in this section incorrectly references OAC 3745-27-08(H)(2)(e) for the distance requirement for the bottom of the compacted clay component of the OSDF liner system and the underlying aquifer. The proper reference should be OAC 3745-27-07(H)(2)(e). The text should be corrected accordingly.

Commenting Organization: U.S. EPA Commentor: Saric  
Section #: 2.2.2.3 Page #: 2-5 Lines #: NA  
Original Specific Comment #: 5

Comment: The last bullet item on the page states that the slope requirement of 2 percent does not apply along the leachate collection corridor. The text should be revised to define the extent of the leachate collection corridor.

Commenting Organization: U.S. EPA Commentor: Saric  
Section #: 2.3.1 Page #: 2-10 Lines #: NA  
Original Specific Comment #: 6

Comment: The second bullet item should be revised to state that leachate will not be discharged to a wetland for treatment. OAC 3745-27-06(C)(10)(i-iii) states that construction and operation of a landfill will not:  
(i) Cause or contribute to violations of any applicable state water quality standard; or (ii) Violate any applicable toxic effluent standard or prohibition under Section 307 of the Clean Water Act; or (iii) Jeopardize the continued existence of endangered or threatened species or result in the destruction of a critical habitat, protected under the Endangered Species Act of 1973. Discharge of leachate to a wetland may adversely affect the wetland according to the OAC cited in this comment.

Commenting Organization: U.S. EPA Commentor: Saric  
Section #: 2.3.2.1.A Page #: 2-12 Lines #: NA  
Original Specific Comment #: 7

Comment: The table states that the minimum factor of safety for slope stability in postflood drawdown conditions should be a minimum of 1.2. The text should be revised to explain why the factor of safety for postflood

Commenting Organization: U.S. EPA  
Section #: 2.3.2.3.B Page #: 2-17  
Original Specific Comment #: 9  
Comment: The first bullet item states that the geotechnical characteristics of the foundation and impacted materials should be evaluated using the site-specific data identified in Section 1.5. If the foundation and impacted materials for Phase V construction are similar to those used in OSDF Cells 3 through 6, consideration should be given to using values from testing reports from OSDF Cells 3 through 6 when determining what values will be used for the geotechnical characteristics of Phase V.

Commenting Organization: U.S. EPA  
Section #: 2.3.2.3.B Page #: 2-17  
Original Specific Comment #: 10  
Comment: The second bullet item on this page states that the depth of influence should be estimated for the stress that will be applied to the foundation soils by the OSDF. The depth of influence should be stated in terms of the percentage of stress as it decreases with depth.

Commenting Organization: U.S. EPA  
Section #: 2.3.2.3.B  
Original Specific Comment #: 11  
Comment: The third bullet item deals with settlement calculations for the foundation below the leachate collection system. Consideration should be given to calculating immediate settlement, particularly in the drainage layer, and long-term settlement, typically using drained conditions.

Commenting Organization: U.S. EPA  
Section #: 2.3.2.4 Page #: 2-17 and 2-18  
Original Specific Comment #: 12

Comment: Paragraph B also should consider settlement of impacted material caused by decomposition of organic materials. It is not clear what percentage of impacted material will be organic. If a large volume of organic material is placed in one area, it can create localized differential settlement. In addition, the document also should address the requirements for releasing gases, which will be generated inside of this landfill, from under the final cover. If a large volume of gas builds up inside of the landfill, it can cause the final cover to fail. The text should be revised to include discussion regarding settlement.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.3.3                      Page #: 2-21                      Lines #: NA  
Original Specific Comment #: 13

Comment: The reference for U.S. Department of Energy (DOE) "Natural Phenomena Hazards Mitigation", DOE Order 5480.28, dated 1993, has been superseded by DOE Order 420.1. The reference should be updated and the document reviewed according to the changes made in DOE Order 420.1. According to the new 420.1 guidance, every DOE facility must have a site-specific implementation plan for the requirement given in the order. The Fernald Implementation Plan should be referenced, or if Fernald does not have an implementation plan for 420.1, then the reason that this document was not created should be addressed.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.3.3                      Page #: 2-22                      Lines #: NA  
Original Specific Comment #: 14

Comment: The reference to the U.S. Navy document, Soil Mechanics, Foundation and Earth Structures, Naval Facilities Engineering Command (NAVFAC) Design Manual DM-7, 1971, should be split into the specific NAVFAC Design Manuals used. The most recent copy of each Design Manual should be used, which is 1982 for DM-7.1 and 1986 for DM-7.2. This reference should be changed to include these updates and the sections that use these documents, compared to the updated design recommendations.

Commenting Organization: U.S. EPA  
Section #: 2.4.3 Page #: 2-25  
Original Specific Comment #: 15

Commentor: Saric  
Lines #: NA

Comment: The last sentence in the first bullet item states that the same guidelines only require not less than 20 to 30 percent of the particles, by weight, to be finer than a U.S. No. 200 standard sieve. It should be noted that OAC 3745-27-08 (C)(1)(c)(iii) requires that no less than 50 percent of particles, by weight, passing through the 200-mesh sieve. The text should be corrected accordingly.

Commenting Organization: U.S. EPA  
Section #: 2.4.3 Page #: 2-26  
Original Specific Comment #: 16

Commentor: Saric  
Lines #: NA

Comment: The last bullet item on this page, "(iii) maximum shear strength between soil-geosynthetic and geosynthetic-geosynthetic interfaces" should be changed to read "(iii) maximum friction angle between any soil-geosynthetic interface and between any geosynthetic-geosynthetic interface". The text should be reviewed and corrected accordingly.

Commenting Organization: U.S. EPA  
Section #: 2.4.3 Pages #: 2-27  
Original Specific Comment #: 17

Commentor: Saric  
Lines #: NA

Comment: The section should be revised to discuss the general temperatures within which the geosynthetic clay liner can be installed. Two conditions that should be addressed are freezing and excessive heat requirements.

Commenting Organization: U.S. EPA  
Section #: 2.4.3 Page #: 2-27  
Original Specific Comment #: 18

Commentor: Saric  
Lines #: NA

Comment: The first bullet item states that the clay liner should be free of debris, foreign material, and deleterious material. Organic material should be added to this list. Also, add the following after the first bullet on this page: "Have a factor of safety for hydrostatic uplift not less than 1.4 (OAC 3745-27-08 (C) (1) (1))."

Comment: In the first paragraph on this page, second bullet item; American Society for Testing and Materials (ASTM) method for testing of moisture content and dry density is missing the appropriate number. There are several methods. The text should be corrected to include the proper ASTM number.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.4.4.A                  Page #: 2-27                      Lines #: NA  
Original Specific Comment #: 20

Comment: The geosynthetic clay liner described in this section covers the secondary geosynthetic clay liner. It appears that the primary geosynthetic clay liner will not be installed over a compacted clay liner, but instead will be installed over an aggregate drainage layer (leak detection system). It is not clear from this document what measures will be taken to protect it from the sharp aggregate in the leak detection layer. According to Figure 1-1 in Section 1, a geotextile cushion is used between geomembrane liner and drainage layer; however, nothing is used between the geosynthetic clay liner, in the primary liner, and the drainage layer. The text should be revised to address this issue.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.4.5                      Page #: 2-28                      Lines #: NA  
Original Specific Comment #: 21

Comment: This section should include a discussion on the procedure to be used to handle punching failure in the geomembranes.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.4.5.A                  Page #: 2-29                      Lines #: NA  
Original Specific Comment #: 22

Comment: The first paragraph calls for use of textured geomembrane; it is not clear; however, if this geomembrane will be textured on one or both sides. The textured surface on the up-side of the geomembrane will impede the flow of leachate in the drainage layer, which may require an increase in the liner's slope. This issue should be reviewed and the text should be revised to address this issue.



Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.4.5.A                  Page #: 2-29                      Lines #: NA  
Original Specific Comment #: 23

Comment: The first paragraph calls for use of textured geomembranes. It is not clear; however, whether the geomembranes will be textured on one or both sides. Textured surface on the up-side of the geomembranes will impede the flow of leachate in the drainage layer, which may require increase in the liner's slope. This issue should be reviewed, and the text should be revised to address this issue.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.4.5.A                  Page #: 2-29                      Line #: NA  
Original Specific Comment #: 24

Comment: Paragraph 2 should be corrected to include the proper ASTM procedure for geomembranes testing. Also, the text is not clear as to what type of seaming technique will be used in joining the geomembranes panels. Typically, the liners are constructed by double-track wedge welding that produces an air channel between the two welds. This air channel is used to nondestructively air pressure test the integrity of the seam. This type of test was not listed in the text. The text should be revised to discuss the type of welding that will be used in constructing this primary and secondary geomembrane liners.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.4.6.B                  Page #: 2-30                      Lines #: NA  
Original Specific Comment #: 25

Comment: Another calculation that should be considered for the geotextile is the shear strength of the geotextile in relation to the geomembranes below and the waste above.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.4.7.B                  Page #: 2-31                      Line #: NA  
Original Specific Comment #: 26

Comment: The factor of safety to prevent development of geosynthetic tension should be at least 1.3, in accordance with the table in Section 2.3.2.1.A on page 2-12.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.5.1.A                  Page #: 2-35                      Line #: NA  
Original Specific Comment #: 28

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.5.1.A                  Page #: 2-36                      Line #: NA  
Original Specific Comment #: 29

000011

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.5.1.A                  Page #: 2-38                      Line #: NA  
Original Specific Comment #: 31

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.5.2.A                  Page #: 2-40                      Line #: NA  
Original Specific Comment #: 32

Commenting.Organization: U.S. EPA Commentor: Saric  
Section #: 2.5.2.B Page #: 2-41 Line #: NA  
Original Specific Comment #: 33

000012

Commentor: Saric  
Line #: NA

Commenting Organization: U.S. EPA Commentor: Saric  
Section #: 2.5.3.A Page #: 2-42 Line #: NA  
Original Specific Comment #: 35

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.5.3.A                      Page #: 2-44                      Line #: NA  
Original Specific Comment #: 36

Comment: In the last bullet on this page the text states that the leachate collection system and leak detection system piping inside of the valve house will be fabricated from carbon steel. Carbon steel should not be used on pipelines that may be conveying corrosive liquids and not flowing full. There are a number of plastic type pipe and fittings available for this type of installation. High density polyethylene (HDPE), polyvinyl chloride (PVC), and other plastic pipe and fittings are available with flange connection so that they can be disassembled if required for maintenance. If metallic pipeline is required inside of the valve house, stainless steel should be used. The text should be revised accordingly.

Commentor: Saric  
Line #: NA

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.5.3.A                  Page #: 2-45                      Line #: NA  
Original Specific Comment #: 38

Commentor: Saric  
Line #: NA

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.5.3.A                  Page #: 2-46                      Line #: NA  
Original Specific Comment #: 39

Commentor: Saric  
Line #: NA

Comment: The first bullet on this page indicates that liquid level switches will be used to detect the presence of liquids in the sump. Based on the information provided in the text, the sumps may remain empty for long periods of time. It is also possible that the sump may contain some liquid for a long period of time, without tripping the level switch. Level switches that are idle for a long period of time may become inoperative. This type of system would be better served with a continuous liquid level probe, such as a capacitance probe or an ultrasonic level control system that does not rely on mechanical switches. The design should be reviewed and revised accordingly.

Commenting Organization: U.S. EPA Commentor: Saric  
Section #: 2.5.3.A Page #: 2-47 Line #: NA  
Original Specific Comment #: 41

Comment: The third bullet item states that the EPLTS gravity line should be constructed with a minimum slope of 0.25 percent. Consideration should be given to settlement of the line that would effect a 0.25 percent slope. The text should be reviewed and revised accordingly.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.5.3.A                      Page #: 2-47                      Line #: NA  
Original Specific Comment #: 42

Comment: The last bullet item on this page states that a control valve house will be installed upstream from the permanent lift station. It also states that one of the functions of the control valve house is to throttle flow in the gravity line in order to protect the lift station from overflowing due to flows in excess of its capacity. The fourth sentence states that "a valve should be installed in the control valve house to provide a manual means for regulating or preventing flow into the permanent lift station". The last sentence states that "a motor-operated valve controlled by high level sign as from the permanent lift station will be installed in the control valve house". It is not clear why the lift station is not designed to handle the maximum flow rate of the gravity system. If valves are used to throttle flow rate out of the leachate collection drains, the leachate may eventually back up into the leachate collection layer of the landfill liner. When that

Commenting Organization: U.S. EPA  
Section #: 2.5.3.A Page #: 2-48  
Original Specific Comment #: 44  
Comment: The second bullet item on this page states that  
"the pumps for the permanent lift station should be sized  
to pump liquid through a double-wall forcemain to  
biosurge lagoon." Typically, the pumps are sized to  
handle the incoming flow from the leachate collection  
layer in the landfill. The forcemain is sized to  
adequately carry the maximum discharge rate of the lift  
station. The text should be revised accordingly.

Commenting Organization: U.S. EPA Commentor: Saric  
Section #: 2.5.3.A Page #: 2-48 Line #: NA  
Original Specific Comment #: 45  
Comment: The text in the third bullet item on this page states that " The lift station should also control a system for automatically closing the valve at the control valve house in the event of power failure or if liquid levels in the lift station rise to an unacceptable high level (below the rim of the lift station or any level that would cause an electrical short or damage to equipment in the lift station)." It is not clear how this will be accomplished. If power fails, the motor control valve located in the control valve house will remain in open position (the position it was in prior to power failure). Motorized valves require power to open and close. A valve that will close on power failure is a solenoid valve, the type that closes when de-energized. Also, electrical components that can short out when

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.5.3.A                      Page #: 2-48                      Line #: NA  
Original Specific Comment #: 46  
Comment: The last sentence in the fourth bullet item on this page needs to be revised. The design of the lift station should be based on an empty wet-well.

Commenting Organization: U.S. EPA  
Section #: 2.5.3.A Page #: 2-49  
Original Specific Comment #: 47  
Comment: The first bullet item on this page states that  
"potential surge flows from OSDF cell into the permanent  
EPLTS gravity line due to heavy precipitation into a  
newly open cell should be regulated using valving in the  
EPLTS valve house or in the control valve house so that  
the storm design-basis flow rate upon which the permanent  
lift station pump design is based is not exceeded." It is  
not clear what "newly open cell" means. If the cell is  
empty, there is no need to drain the storm water into the  
leachate system. However, if the cell is being filled  
with impacted material, the leachate must be removed so  
that the leachate head of no less than 12 inches in the  
leachate collection system will be exceeded. Closing the  
off valve on the leachate line will back-up leachate into  
the leachate collection layer in the landfill's cell. The  
text should be reviewed and revised accordingly.

Commenting Organization: U.S. EPA  
Section #: 2.5.3.A Page #: 2-49  
Original Specific Comment #: 48  
Comment: The second bullet item on this page states that  
"the permanent lift station should have sufficient pump  
capacity to prevent the buildup of liquid in the manhole  
..." It is not clear where this manhole will be located.  
If the manhole is located on the gravity line upstream of  
the control valve house, then it will definitely have  
buildup of liquid (leachate) when the control valve is  
closed or partially closed. The text should be revised  
to clarify this issue.



Comment: The fourth bullet states that it should be demonstrated that the pipes have adequate strengths to handle the predicted hydraulic pressures. A recommended factor of safety should be given to quantify "adequate strength".

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.5.3.B                  Page #: 2-50                      Line #: NA  
Original Specific Comment #: 50

Comment: In the first paragraph, fourth bullet item, it is not clear why "hydraulic pressure inside the permanent EPLTS gravity line" needs to be calculated. Typically, gravity lines flow partially full. In this case, because the control valve can be closed on the gravity line inside of the control valve house, it will be impossible to calculate "hydraulic pressure" in that pipeline, because it will be impossible to predict how far the leachate will back up into the landfill cell. The text should explain the need for this calculation.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.5.3.B                  Page #: 2-51                      Line #: NA  
Original Specific Comment #: 51

Comment: The second bullet item from the bottom of the page states that the EPLTS valve houses and control valve house should have at least six air changes per hour. The air change should be quantified according the volume of air that must be changed to achieve this recommendation as well as how this will be measured. It is not clear whether the six air changes per hour cycle is on a continuous basis or only when these structures are being serviced. The text should clarify these issues.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.5.3.B                  Page #: 2-51                      Line #: NA  
Original Specific Comment #: 52

Comment: The third bullet item on this page states that "the elevations of the EPLTS valve house and control valve house should be evaluated for flooding potential based on 25-year, 24-hour storm." It is not clear why the permanent lift station was excluded from this evaluation. Furthermore, it is not clear why the hydrostatic uplift calculations for these structures is not based on the

flood elevation, rather than high groundwater elevation. The text should be revised to address this issue.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.5.3.B                  Page #: 2-51                      Line #: NA  
Original Specific Comment #: 53

Comment: The seventh bullet item on this page states that the valve houses and control valve house will be maintained at 40°F. This temperature will promote condensation inside of these structures. Condensation on metallic components, specifically electrical controls and equipment, will promote corrosion, which will increase maintenance costs. The temperature requirements for these structures should be reviewed.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.5.3.B                  Page #: 2-51                      Line #: NA  
Original Specific Comment #: 54

Comment: The second bullet item on this page states that "the liquid entering the horizontal monitoring well should flow by gravity to a monitoring point located at the western perimeter of the OSDF". It is not clear how this will be possible. In order for any liquid to flow by gravity, there must be a hydraulic gradient. It is not clear how this hydraulic gradient will be established. The text should be revised to address this issue.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.6.1                  Page #: 2-57                      Lines #: NA  
Original Specific Comment #: 55

Comment: In addition to the General Design Criteria listed in this section, OAC 3745-27-08(C)(15)(g) states "The owner or operator shall provide a means of relieving pressure under the flexible membrane liner due to the generation of landfill gases." The text should include this requirement.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.6.2                      Page #: 2-57                      Line #: NA  
Original Specific Comment #: 56

Comment: The second and third bullet items state that the roots of the vegetative cover should not grow below the vegetative cover and the vegetative cover should not be an attraction to burrowing animals. It has been found in other UMTRA sites, that even though the cover is designed to prevent these two issues, roots will penetrate the

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.6.3.A                  Page #: 2-59                      Line #: NA  
Original Specific Comment #: 57

Comment: The first bullet item on this page states that the topsoil erosion will have a maximum rate of 5 tons per acre per year. This maximum erosion rate should be revised to consider the 1,000-year design life of the landfill.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.6.6.A                  Pages #: 2-62                      Line #: NA  
Original Specific Comment #: 58

Comment: The first bullet item states that the biointrusion barrier should consist of durable crushed rock or natural stone. The bullet item should state what size of crushed rock is acceptable according to Ohio Department of Transportation (ODOT), Construction and Material Specifications.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.6.7.A                  Pages #: 2-63                      Line #: NA  
Original Specific Comment #: 59

Comment: In the first paragraph, the first bullet item states that the drainage layer may consist of a geonet that has equivalent performance capabilities to a granular layer. If this substitution is made, the total thickness of the cover system will be reduced by about 12 inches. This may compromise the frost protection capability of the cover system. The text should be revised to address this issue.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.8.7.A                  Page #: 2-84                      Line #: NA  
Original Specific Comment #: 60

Comment: The fifth and sixth bullet items state that field stone or rough, unhewn quarry stone will be used for rip rap and granular soils will be used as filters. The bullet items should be expanded to include the

Comment: The text states that the clay material used for the test pad should be obtained from the same source as the clay material that will be used in OSDF construction. The text further states that clay material will satisfy the material property requirements in OAC 3745-27-08(C)(1)(c). However, the last paragraph of this section states that available borrow at the site may not meet some of the requirements of the above-referenced ARAR. The text should be corrected to clearly state that the material used for the test pad will not meet all of the requirements of OAC 3745-27-08(C)(1)(c).

Comment: A bullet item should be added to address grounding of the temporary trailer, to provide protection from lightning strikes.

Comment: The fourth bullet item states that the minimum acceptable section for construction of haul roads should include a prepared subgrade. The bullet item should explain what the definition of a prepared subgrade is in terms of modified or standard Proctor specifications (ASTM D1557 or D698).

Comment: Part A states that the borrow area development may include processing, including moisture conditioning, blending, screening, or admixture modification. Part A also states that temporary surface water management and erosion and sediment controls may be established. Both of these activities would require calculations. Section B should be revised to include calculations for these activities.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.11.2.2              Page #: 2-109                      Line #: NA  
Original Specific Comment #: 65

Comment:     The first bullet item on the page states that fugitive emissions should be controlled using crusting agents, surfactants, or other appropriate methods. The bullet item should state that fugitive emissions agents should not contain any petroleum products or lignosulfates.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.11.2.5              Page #: 2-113                      Line #: NA  
Original Specific Comment #: 66

Comment:     The first bullet item on this page should be revised to state quantitatively the meaning of "thin" with regard to the spreading of municipal waste.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.11.2.6              Page #: 2-113                      Line #: NA  
Original Specific Comment #: 67

Comment:     The paragraph should be revised to define a Category 2 through 5 material or cite a previous document as a reference.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 3                      Page #: 3-1                      Line #: NA  
Original Specific Comment #: 68

Comment:     Project deliverable requirements should be accompanied by a timeline or schedule that includes the order of reports, plans, and specifications to be submitted for review and the estimated time for review.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 3.2.2                      Page #: 3-5                      Line #: NA  
Original Specific Comment #: 69  
Comment:     The table should be labeled with a title or number.

## Drawings

Commenting Organization: U.S. EPA                      Commentor: Saric  
Drawing #: 90X-6000-G-00379                      Section #: B/G-18  
Original Specific Comment #: 70

Comment:     The detail shows vertical sidewalls. Consideration should be given to slope stability issues and the general feasibility of leaving vertical sidewalls, given the soil types present.

Commenting Organization: U.S. EPA

Commentor: Saric

Drawing #: 90X-6000-G-00379

Section #: C/G-18

Original Specific Comment #: 71

Comment: The detail should cite or show that the compacted fill friction angle will allow the fill to be shaped into 2H:1V slopes, with a factor of safety equal to 1.3, as stated in the Design Criteria Package.

Commenting Organization: U.S. EPA

Commentor: Saric

Drawing #: 90X-6000-G-00394

Section #: D/G-8

Original Specific Comment #: 72

Comment: The detail does not specify what type of material will be used to seal the area where the Leak Detection System (LDS) or Redundant Leachate Collection System (RLCS) pipes perforate the landfill liner. An example of this would be nonshrink grout.

Commenting Organization: U.S. EPA

Commentor: Saric

Drawing #: 90X-6000-G-00402

Section #: B/G-40

Original Specific Comment #: 73

Comment: Note 5 states that the fill above the 30-inch corrugated metal pipe (CMP) culvert will be placed and compacted according to Specification Section 02200. The note should be revised to state what precautions will be taken to avoid damaging the existing EPLTS pipe.